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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Michel Vaultier

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EXAMINER

KOSLOW, CAROL M

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/529,361	Applicant(s) VAULTIER ET AL.	
	Examiner C. Melissa Koslow	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 113-126 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 113-126 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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This action is in response to applicants' response to 6 October 2008. the amendment to claim 113 has overcome the article by Frage-Dubreuil et al. Applicant's arguments have been fully considered but they are not persuasive.

Claim 113 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 113 is indefinite since it is unclear if all the F_0 functions are converted or if at least one of the F_0 functions are converted. The phrase "the one of more initial functions F_0 " can be interpreted both ways. In addition, the claim states F_0 is converted to first novel functions, but these "first novel functions" are not defined. Thus the actual composition of the composition is unclear and thus the claim is indefinite. Finally, it is unclear how the F_0 in the salt are converted while F_0 in the liquid is not when both are present under the same conditions.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 114-126 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent application publication 2002/0010291.

This reference teaches a mixture of a functionalized ionic liquid combined with a non-functionalized ionic liquid (para. [0054]). This teaching suggests any combination of these liquids, which allows for mixtures where the non-functionalized ionic liquid acts as the matrix and the functionalized ionic liquid is dissolved therein. The reference teaches the non-functionalized liquid can be any known ionic liquid, which includes of claims 119, 121 and 124. The functionalized ionic liquid is one where the anion is one of those claimed in claims 85, 122

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and 124 and the cation is functionalized, such as a pyridinium or an ammonium, where the functional group is a halogen, SCN, CN, OH, OR, OCOR, COOR and O₂SR, where R is an alkyl group with 1-20 carbon atoms, and it is linked to the cation by an alkyl group having 1-50 carbon atoms. These functional groups include those claimed. Therefore the taught functionalized salt is recyclable, would have the claimed capability and would carry out the functions added to claims 114 and 124, absent any showing to the contrary. The reference encompasses compositions where the anions of both liquid can be same. There is no indication that functionalized and nonfunctionalized liquids react with each other nor that they can be extracted from each other by solvent extraction which means the taught liquids are dissolved in each other and form a homogenous mixture. The reference suggests the claimed composition.

Applicants states that the general conditions for forming the suggested composition of a mixture of a functionalized ionic liquid combined with a non-functionalized ionic liquid. This is incorrect since the reference teaches combining or mixing the liquids. This is the general synthesis method.

Applicants state the Examiner did not provide support to support her assertion that the bond between a functional group and the catalyst or scavenger are reversible. Applicants are referred to U.S. patent 6,248,540 which discusses attaching and detaching catalysts or scavenger from function groups, which are those taught by the reference and claimed by applicant.

Applicants argue the catalysts in examples 1 and 2 of the reference. The catalyst and ionic liquids of the examples are not those discussed in paragraph 53 nor has the formula given in paragraph 54. It is these formulas which read upon the claimed functionalized ionic liquid. Thus this argument does not overcome the rejection.

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Applicants' argument labeled 2 and 3s not convincing since there is nothing in the reference stating that the catalyst is limited to those used in the argued cross-coupling reactions nor that the catalyst are ones that cannot be removed from functional groups. Applicants are reminded that the claims are directed to a composition comprising a functionalized ionic salt dissolved in a non-functionalized ionic liquid matrix, where the functional group catches one of more molecules, which reads upon the taught catalyst and scavenger. Thus all these arguments addressing the catalyst in the formulas in paragraph 53 does not show that the functionalized ionic liquid having the formulas in paragraphs 54 and 54, where Y is the same as D, and which are the same as those claimed, does not have the argued properties or functions.

Applicants argue that the functionalized salt is not a soluble support reaction support, but there is no evidence presented to support this assertion. The reference suggests ionic liquids having the same cations, anions and functional groups as claimed and therefore the suggested ionic liquid would be expected to have the same properties, when the cations, anions and functional groups are the same as claimed, which means it would act as soluble reaction medium. This argument is not convincing.

Applicants argue the reference does not teach or suggest that the functionalized ionic liquid dissolves in the non-functionalized liquid or that it forms a homogenous mixture with the non-functionalized ionic liquid. As stated above, there is no indication that the ionic liquids can be extracted from each other by solvent extraction, i.e. are dissolved in each other and form a homogenous mixture. Since the both liquids can those claimed, this would suggest that they are dissolved in each other and form a homogenous mixture, absent any showing to the contrary. The fact the ionic liquid does not dissolve in a hydrocarbon alkane or aromatic co-solvent does

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not mean that it would not dissolve in a non-functional ionic liquid, which has different properties than the disclosed solvents.

The declaration is not convincing for the following reasons and the fact that the claimed composition can be used new applications does not show that composition itself is novel and non-obvious. Again applicants are reminded they are claiming a composition, not a method of using the composition.

The declaration under 37 CFR 1.132 filed 6 October 2008 is insufficient to overcome the rejections as set forth in the last Office action because:

The fact that the reference does not state the disclosed functionalized ionic liquid is recyclable or a soluble reaction support does not overcome the rejection. As discussed above, the taught functional groups are the same as those claimed and thus they must be recyclable and the use of the claimed composition as a soluble reaction support does not patentably distinguish the claimed composition over that suggested by the reference. In response to applicant's argument as to the intended use of the claimed invention, the use must result in a compositional difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. In this case, the suggested composition is composed of the claimed ionic liquids and the argued uses do not result in a compositional difference between the claimed invention and the prior art.

It states that the claimed subject matter meets a long-felt need in the art. However, there is no showing that others of ordinary skill in the art were working on the problem and if so, for how long. In addition, there is no evidence that if persons skilled in the art who were presumably working on the problem knew of the teachings of the above cited references, they

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would still be unable to solve the problem. See MPEP § 716.04. Accordingly there is no evidence of long-felt need. The fact that the cited articles state the use of functionalized ionic liquids in organic synthesis is an advantage does not mean that the claimed composition is a major breakthrough in the art or meets a long-felt need in the art. In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness. The rejection is maintained.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/cmk/
December 9, 2008

/C. Melissa Koslow/
Primary Examiner
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